

Name: Key

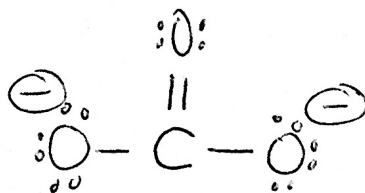
Solve the following problems:

1. (12 pts.) Draw the Lewis structure for the following:

(a) CO_3^{2-}

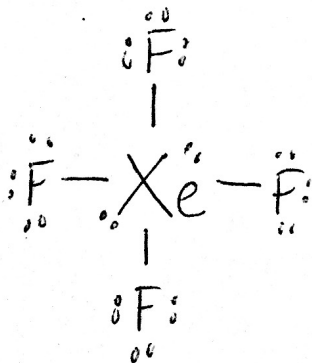
$$\text{VE} = 4e^- + 3(6e^-) + 2e^-$$

$$\text{VE} = 24e^-$$

Electron Group Geometry: trigonal planarMolecular Geometry: trigonal planar(b) XeF_4

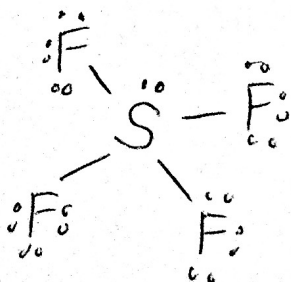
$$\text{VE} = 8e^- + 4(7e^-)$$

$$\text{VE} = 36e^-$$

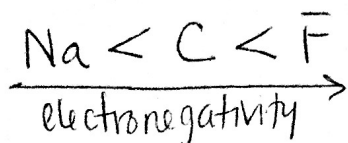
Electron Group Geometry: OctahedralMolecular Geometry: square planar(c) SF_4

$$\text{VE} = 6e^- + 4(7e^-)$$

$$\text{VE} = 34e^-$$

Electron Group Geometry: trigonal bipyramidalMolecular Geometry: see-saw

2. (6 pts) (a) Arrange the following atoms in order of **increasing** electronegativity: **F, Na, C**.

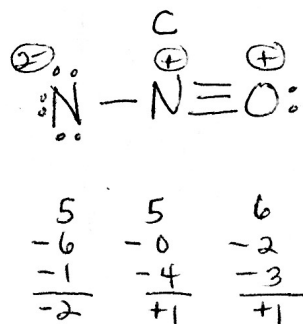
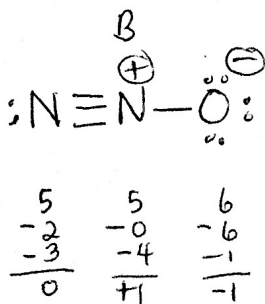
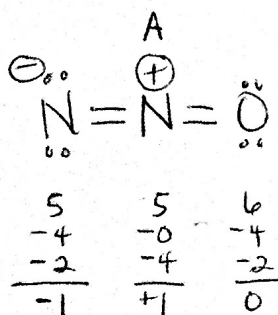


- (b) What type of bond would each of those atoms make with another F atom (polar, nonpolar or ionic)?

- i. F nonpolar
- ii. Na ionic
- iii. C polar

3. (7 pts.) Dinitrogen monoxide (N_2O) has three possible Lewis structures. Draw these three Lewis structures and determine which structure is the preferred one. Explain why.

$$\text{VE} = 2(5e^-) + 6e^- = 16e^-$$



$\text{:}\text{N}\equiv\text{N}-\ddot{\text{O}}\text{:}$ is the preferred structure. It minimizes formal charges and the negative formal charge is on the most electronegative atom.